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Rocky Mountain form. They are readily distinguishable from *zelotes*, the breeding bird of the Sierras. *Montana* is probably a winter visitant, therefore, to south-eastern California from the northeastward.

*Sitta carolinensis aculeata*. Slender-billed Nuthatch. Fairly common among the cottonwoods.

*Parus gambeli*. Mountain Chickadee. Common in the brush and cottonwoods of the river bottom.

*Psaltriparus minimus*. California Bush-Tit. Fairly common along the river. The specimens secured are quite like those of the southern coast district of California, and these in turn do not present tangible differences from Oregon skins of the same season.

*Auriparus flaviceps*. Verdin. One specimen, secured by Dixon, was the only one met with. We found no mesquites in the vicinity of Victorville, and this evidently accounts for the absence of verdins. For farther down the Mojave River, at Barstow, both mesquites and verdins are plentiful.

*Regulus calendula cinereus*. Ashy Kinglet. Fairly common, mostly along the wooded bottom lands. But several were met with among "sage" bushes out on the desert. All the skins secured show large size, and grayness of coloration conspicuous anteriorly. (See CONDOR VI, Jan. 1904, 25.)

*Myadestes townsendi*. Townsend Solitaire. Solitaires were fairly numerous among the cottonwoods, where they were feeding on mistletoe berries.

*Hylocichla guttata nana*. Dwarf Hermit Thrush. One specimen was taken by Pinger near the river.

*Merula migratoria propinqua*. Western Robin. Fairly common among the cottonwoods, where they were feeding on the mistletoe berries.

*Sialia mexicana occidentalis*. Western Bluebird. Abundant along the river bottom where they were feeding largely on mistletoe berries.

*Sialia arctica*. Mountain Bluebird. Two flocks were encountered out on the desert quite a distance from the river.

### The Sage Grouse, *Centrocercus urophasianus*

BY L. E. BURNETT<sup>a</sup>

EDITED BY S. ARTHUR JOHNSON

I HAVE had the pleasure of giving the sage grouse considerable attention, for, owing to my residence where the species is very numerous, I have been enabled to observe the birds at all times of the year. It is worth a long trip to see the male in full plumage at mating season. His striking dress and yellow air-

<sup>a</sup>The author of this sketch was born in Luray, Missouri. His family moved to Colorado when he was a mere lad and settled near Loveland. After a residence there of several years they took up life on a ranch not far from Little Medicine, Wyoming, which was his home until his death. From early childhood Mr. Burnett was a passionate lover of animal life. He was much in the field and sought many times to tame his wild friends. One fall he had seven young antelope in captivity, but the experiment proved a failure owing to lack of proper diet.

Life in Wyoming gave him ample opportunity for observation and, by familiarizing himself with the best literature, he became imbued with the scientific spirit. In order that he might collect and preserve, he learned the art of taxidermy and attained usual proficiency in that line. He strove always for expression in his work, and secured results through his large knowledge of wild life.

The greater part of the last two years of his life was spent in collecting and mounting material for the museum of the Colorado Agricultural College. It was while living here that a severe attack of his lifelong enemy, asthma, took him from us. From boyhood he struggled with a body weakened by chronic pulmonary troubles. His ambition and love of his work often led him beyond the limits of his strength. His cheerful disposition and kindly attitude endeared him to all with whom he came in contact. Following plans laid by himself, his valuable private collection was presented to the public library of Fort Collins, Colorado.—S. A. J.

galls (see accompanying illustration) render him one of our handsomest game birds. By the first of December one can find the starting frills and the young pin feathers of white that border the galls and front of throat. The frills start from the sides of the neck and vary in number and length. They are pencil like, the point being armed by a little brush which is slightly curved at the tip. When the bird is traveling or at ease the plumes are flattened against the shoulder, but if frightened, he usually runs with these partly erected with the other feathers of the head and neck. The young males (sometimes called bulls) are not so dark or well frilled as the old, but rather frosted. The throats of the old males are also darker.

I have heard them drum as early as December. This performance is most often observed where hundreds of males and females have congregated together, a custom which they have in the fall of the year. By February the males are all drumming, but this is not continued during bad weather which closes the session until fair weather returns. By the latter part of the month the males are in full dress. Their protracted meetings last until the first days of May. After the violets and buttercups have come and the song of the sage thrush begins, their drumming is heard but occasionally. Their costume is becoming shabby and soiled, not so presentable. By the balmy June days, they have lost most of their frills, and the breast is dirty and worn from rolling in the dust and stretching on the ground in birding. They are credited with soiling the breast while drumming, but I have never observed this to be one of the causes during my entire fifteen years with them. When drumming they stand very erect, holding the wings away from the sides and nearly perpendicularly, while the large loose skin of the neck is worked up, and the head drawn in and out until the white feathers are brought to the chin. At the same time the galls are filled with air until the birds look as if they were carrying snowballs on their shoulders. Then the skin which lies between the galls is drawn in with a sucking movement, thus bringing the galls together or nearly so. With this action the air is expelled from the throat producing the noise, which is hard to mimic and which resembles that of an old pump just within hearing distance. The first sound is that of a low "punk" the next "de," followed by the highest, "punk punk," and is made without movement of the wings. After the bird has accomplished this feat he walks away a few paces either in a straight line or a circle, with wings down, hanging loosely, but not grating on the ground. At times they do drag the wings as they strut along with tail spread and erect, though not so perpendicular as that of a turkey. Again they will dance about with all the pomp of a male pigeon.

Their courts are generally in very conspicuous places, being either on some barren flat or moraine where they may be seen from a distance. The males, yearlings, and old are social and congregate at these places in bunches comprising from twenty-five to a hundred or more. These birds do not mate, so far as I have been able to learn, but the females come to these courts from all quarters at about sundown or early in the morning. At such times by patient watching one may see a hen coming in in very rapid flight. The wing motion is composed of from three to five strokes with soaring between. At the first rising from the ground the flight of the males is rather laborious, but after a start is made it is rapid and graceful. At the drumming period the males are very jealous and many fights, some of which are quite serious, take place. The fight consists in one bird seizing another by the head, neck, or jacket and pulling and beating with the wings. Its duration is very brief, one or the other giving in. After the session on the bird-

ing grounds, the males fly away to their home in the sage until time again calls them to drill.

In April many of the females are setting while others have found suitable locations. The courts are not so popular now for the males fail to attract attention. Soon after this the session is brought to a close. The females nest in the parks and valleys usually near some spring or rivulet, though there are exceptions to this rule. One must look closely, for the old bird will permit herself to be almost trampled upon before she will disclose the secret of her treasures. On being disturbed the hen will usually forsake her nest and seek a location elsewhere. The nest is poorly constructed, consisting of a shallow depression under a sage

bush, lined with blades of grass and a few of the bird's own feathers. The hens lay from six to nine and occasionally ten eggs. These are a dirty olive buff heavily blotched with Vandyke brown. Badgers and coyotes destroy many nests while eagles are an important enemy.

The young are like little turkeys in color and peep similarly. They leave the nest immediately upon hatching. Attempts to raise them have always failed, though I have secured the very young and put them with hens. The young will tolerate no foster mother, but escape from the pen, if possible, and wander away uttering their plaintive little whistle "ra-do-ra-do." I believe that they might be reared if one had a turkey brood in a patch of alfalfa where the chicks would feel more at home and be able to eat the food of their choice.



MALE SAGE GROUSE IN NUPTIAL PLUMAGE  
(Mounted by L. E. Burnett)

The actions of a sage hen with a brood remind one of a turkey. The presence of the brood is often made evident by the actions of the mother which are wild and foolish. In these circumstances one must be very careful lest he tramp on the chicks for they are much the color of the ground upon which they lie very closely. After considerable clucking and muttering the mother will wander off some distance and watch and listen for a signal of distress. If one whistles the notes of a little one in distress it will throw her into spasms of excitement. She will act as if injured in both wings and body as she flutters around uttering a clucking noise. By November the young equal the old in size, but the color is not so dark—more of a light brownish. The young feed upon insects, but from November till spring the birds are forced to live upon sage, which strongly taints the meat.

When riding in the spring and summer I have often seen single hens and

sometimes bunches of them. They were always bright and in good condition of flesh. They appeared to be idle which leads me to think that the late hatches do not lay the following spring. If this were to be seen only in summer I would believe that they had been robbed of their possessions, but it occurs when the hens should be nesting.

The counties of Albany, Converse, Natrona, and Carbon are the places where grouse are most abundant in Wyoming. A single hunter has been known to kill a hundred birds in a day without a dog. The best hunting is found over lands adjacent to springs, down green draws and the bottoms along streams, and the best time to find coveys is in the morning or evening when the birds are feeding. After feeding they hide either on the feeding ground or at some distance from it where the sage is large enough to screen them from enemies and the rays of the sun. Ofttimes a hen with her brood will venture to take refuge in the shade of a ranchman's cabin or barn. It is certain that grouse breed above seven thousand feet but just how much I am unable to say. Hail storms often kill large numbers when they strike the places of hiding. When their feathers are drenched with rain, the birds are often unable to rise, and at such times have been killed with a stick.

### Birds from the West Coast of Lower California and Adjacent Islands

BY HENRY B. KAEDING

IT was the writer's privilege during the summer of 1897 to form one of a party that visited the islands off the west coast of Lower California. This expedition was made in a small schooner, leaving San Diego during the first week in March, and an endeavor was made to touch at all the islands between San Diego and Socorro Island, with the exception of Los Coronados. This was done, some of the more important islands being visited twice and even three times, and landings were also made on the mainland of the Lower California peninsula. Many interesting facts were brought to light concerning the breeding habits of little known shearwaters and petrels and several new species of birds were described from the material collected.

The ornithological material was for the collection of Mr. A. W. Anthony, who has written at length on the results of the expedition (see list of references appended), but as yet there has been no attempt to compile a complete list of the birds encountered on the trip. The following list is intended to furnish in as concise form as possible a complete hand-list of the birds taken or noted by the writer. Obviously it cannot be expected that a list of this kind will embody all the birds of the region visited, and for additional information on the avifauna of the region in question the writer has appended a list of the principal publications pertaining to the subject. With regard to this list of publications, it may be as well to state that no attempt has been made to compile a *complete* bibliography; this has been done by Mr. Brewster<sup>a</sup> and others, and the list of references appended is one of only the principal and leading publications on the subject; a bibliography of this region will be found in several of the works referred to.

Prior to the time of the visit of our party, the more southerly group of islands, Los Revillagigedos, comprising Socorro, San Benedicte and Clarion Islands, had

a. Cf. Brewster, Birds of the Cape Region of Lower California. Bull. Harv. Mus. Comp. Zool., XLI, 1902.